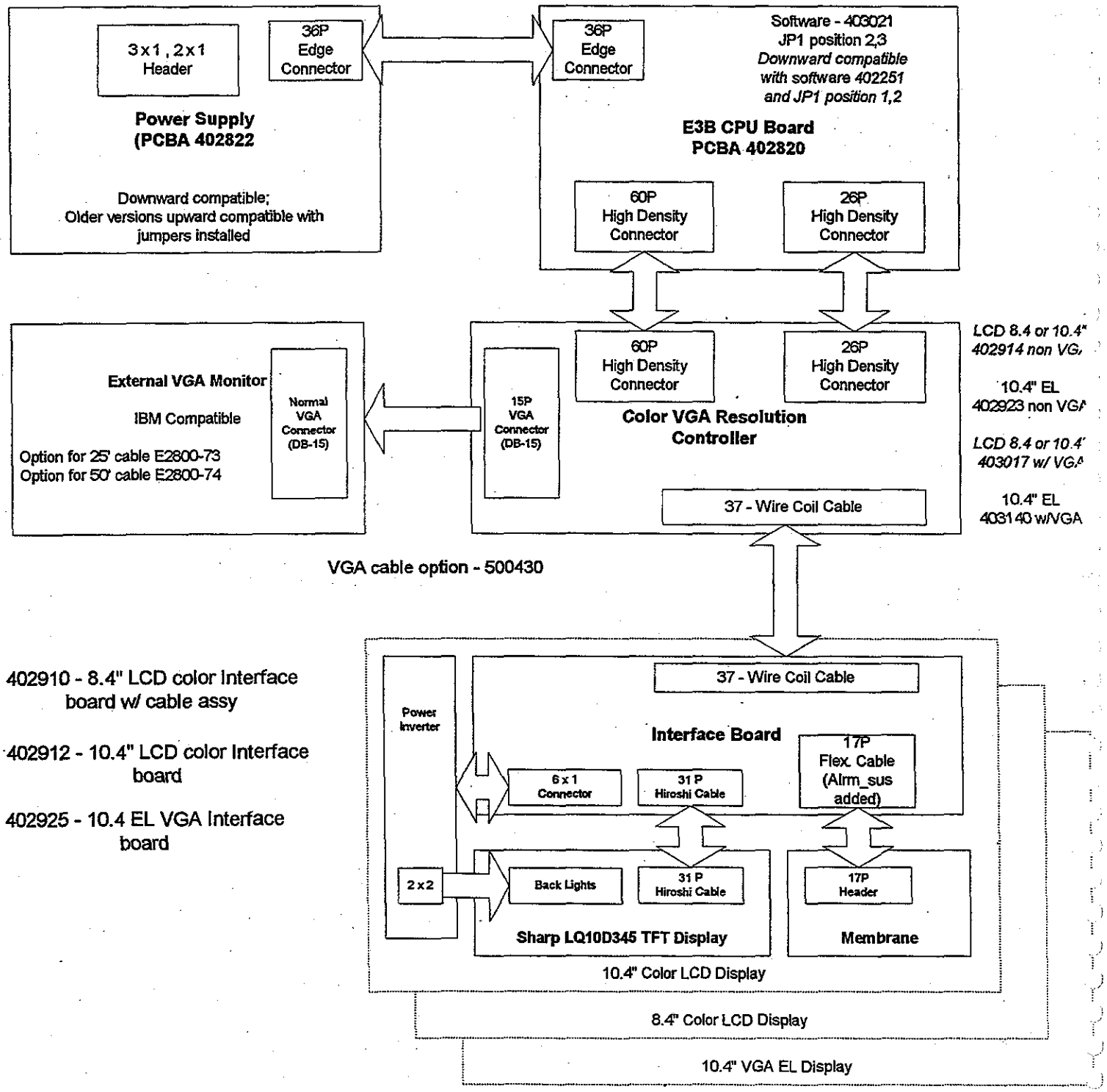
MDE Part Number	Description	Quantity	Reference
364000-0223A	IC, DS2400, SERIAL I.D.	1	U12
364000-0224A	S*IC, 87C752 16MHZ(AFTER PROG LBL BC V.01)	1	U2
364000-0232A	S* IC, 82C55-PLCC,8 MHZ 200 NANO SEC. OR FASTER	2	U6,7
364000-0237A	S* IC, Z8S180 18 OR 20 MHZ,PLCC *ZILOG ONLY*	1	U5
364000-0245A	IC, M27C2001-XX(100ns OR FAST),EPROM,2MEG,DIP32	1	U13
364000-0266A	S*IC, STATIC RAM,131Kx8,HS CMOS 32-PIN,0.4x0.8	1	U14
364000-0270A	IC, LM386N-4,LOW VOLTAGE AUDIO AMPLIFIER	1	U21
364000-0295A	S* IC, PAL MACH210	1	U3-MUST BE PROGRAMMED
364000-0302A	S*IC, 74ACTQ245,BIDIRECTIONAL XCVR SOIC20,SMD	1	U17
364000-0303A	S*IC, 74ACTQ541 OCTAL BUFFER SOIC20	1	U15
364000-0304A	S* IC, 82C54,PLCC28,10MHZ	1	U1
365000-0032A	SKT, 32-PIN LOW PROFILE	1	(U13)
370100-0101A	RES, 100,1/4W,5%,CF TAPE & REEL	2	R20,27
370100-0103A	RES, 10K,1/4W,5%,CF TAPE & REEL	1	R26
370100-0200A	RES, 20,1/4W,5%,CF TAPE & REEL	1	R45
370101-0100A	RES, 10,1/8W,5%,CF TAPE & REEL	2	R29,37
370101-0101A	RES, 100,1/8W,5%,CF TAPE & REEL	4	R5,7,10,18
370101-0102A	RES, 1K,1/8W,5%,CF TAPE & REEL	4	R28,30,31,65
370101-0103A	RES, 10K,1/8W,5%,CF TAPE & REEL	0	R60,61,68
370101-0103A	RES, 10K,1/8W,5%,CF TAPE & REEL	9	R16,38,49,51,58,59
370101-0104A	RES, 100K,1/8W,5%,CF TAPE & REEL	1	R2
370101-0122A	RES, 1.2K,1/8W,5%,CF TAPE & REEL	2	R15,25
370101-0203A	RES, 20K,1/8W,5%,CF TAPE & REEL	3	R12,32,50
370101-0204A	RES, 200K,1/8W,5%,CF TAPE & REEL	3	R54,56,57
370101-0221A	RES, 220,1/8W,5%,CF TAPE & REEL	4	R3,21,35,66
370101-0223A	RES, 22K,1/8W,5%,CF TAPE & REEL	1	R17
370101-0242A	RES, 2.4K,1/8W,5%,CF TAPE & REEL	1	R63
370101-0270A	RES, 27,1/8W,5%,CF TAPE & REEL	1	R69
370101-0331A	RES, 330,1/8W,5%,CF TAPE & REEL	4	R39,42,43,47
370101-0332A	RES, 3.3K,1/8W,5%,CF TAPE & REEL	3	R33,40,44
370101-0334A	RES, 330K,1/8W,5%,CF TAPE & REEL	1	R4
370101-0470A	RES, 47,1/8W,5%,CF TAPE & REEL	6	R1,6,8,9,19,55
370101-0472A	RES, 4.7K,1/8W,5%,CF TAPE & REEL	3	R22,36,67
370101-0473A	RES, 47K,1/8W,5%,CF TAPE & REEL	4	R11,34,53,62
370101-0474A	RES, 470K,1/8W,5%,CF TAPE & REEL	1	R48
370101-0510A	RES, 51,1/8W,5%,CF TAPE & REEL	1	R64
370101-0513A	RES, 51K,1/8W,5%,CF TAPE & REEL	2	R23,24
370101-0621A	RES, 620,1/8W,5%,CF TAPE & REEL	1	R41
370201-0010A	RES, 1,1W,5%,M.O. TAPE & REEL	1	R52
370202-1002A	RES, 10K,1/8W,1%,MF TAPE & REEL	1	R13
370202-2432A	RES, 24.3K,1/8W,1%,MF TAPE & REEL	1	R14
370300-0002A	RES, SIP,10K,8P,NTWK,4	2	RP4,5
370300-0003A	RES, SIP,100K,10P,NTWK,9	1	RP6
370300-0007A	RES, SIP,10K,10-P,NTWK	1	RP3
370300-0018A	RES, 1.0K,SIP,8-PIN,ISOL	1	RP7
370300-0020A	RES, 4.7K,SIP,10-PIN,BUSSED	2	RP1,2
376000-0011A	XSTR, 2N3906,SIGNAL	1	Q3
376000-0019A	XSTR, 2N7000,FET	4	Q1,2,4,5
378000-0001A	DIO, 1N270 T&R	1	D4
378000-0005A	DIO, 1N914,SIGNAL T&R	3	D2,7,10

MDE Part Number	Description	Quantity	Reference
378000-0009A	DIO, 1N754A,6.8V,ZENER T&R ***MOT ONLY***	2	D1,3
378000-0020A	DIO, 1N4622,3.9V,10%,ZENER	1	D8
378000-0058A	DIO, LM336BZ-5.0 VOLTAGE REFERENCE	2	D5,6
380000-0030A	RELAY, SPDT,5V	1	K1
380000-0043A	SW, OVERCURRENT,0.2AMPS	2	TH1,2
380000-0044A	SW, 10-POS,DIP20,THRU HOLE,SWITCHES FACING UP	1	SW1
382000-0049A	S* EMI FILTER 220pF, 200MHZ, CHIP	7	FL6,7,8,9,10,11,12
382000-0051A	S* EMI SUPRESSION FILTER 4700pF,2A,50V	5	FL1,2,3,4,5
384000-0036A	BATT, 2.4V (1 PIN NEG; 2 PINS POS.) REV. B (E1153)	1	BT1
384000-0227A	TRANSIENT VOLT SUPPRESSOR, UNIDIR 1500W 5V	1	TS1
400746-0000	DGHTR BD. 1/8 FOAM INSULLATION, REV B (E1521)	1	4
402819-0000	PCB, E3B PLUS CPU REV. C(E2531)	1	1

PRISM BLOCK DIAGRAM

20401 - 10.4" EL prism
20402 - 8.4" Color LCD Prism
20403 - 10.4" Color LCD Prism


3 x 1 , 2 x 1 Header
36P Edge Connector
Power Supply (PCBA 402822
Downward compatible; Older versions upward compatible with jumpers installed
36P Edge Connector
Software - 403021
JP1 position 2,3
Downward compatible with software 402251 and JP1 position 1,2
E3B CPU Board PCBA 402820
60P High Density Connector
26P High Density Connector
External VGA Monitor
IBM Compatible
Option for 25' cable E2800-73
Option for 50' cable E2800-74
Normal VGA Connector (DB-15)
15P VGA Connector (DB-15)
60P High Density Connector
26P High Density Connector
Color VGA Resolution Controller
37 - Wire Coil Cable
LCD 8.4 or 10.4" 402914 non VGA
10.4" EL 402923 non VGA
LCD 8.4 or 10.4" 403017 w/ VGA
10.4" EL 403140 w/VGA
VGA cable option - 500430
Power Inverter
37 - Wire Coil Cable
Interface Board
17P Flex. Cable (Alrm_sus added)
6 x 1 Connector
31 P Hiroshi Cable
2 x 2
Back Lights
31 P Hiroshi Cable
17P Header
Sharp LQ10D345 TFT Display
Membrane
10.4" Color LCD Display
8.4" Color LCD Display
10.4" VGA EL Display

402910 - 8.4" LCD color Interface board w/ cable assy

402912 - 10.4" LCD color Interface board

402925 - 10.4 EL VGA Interface board

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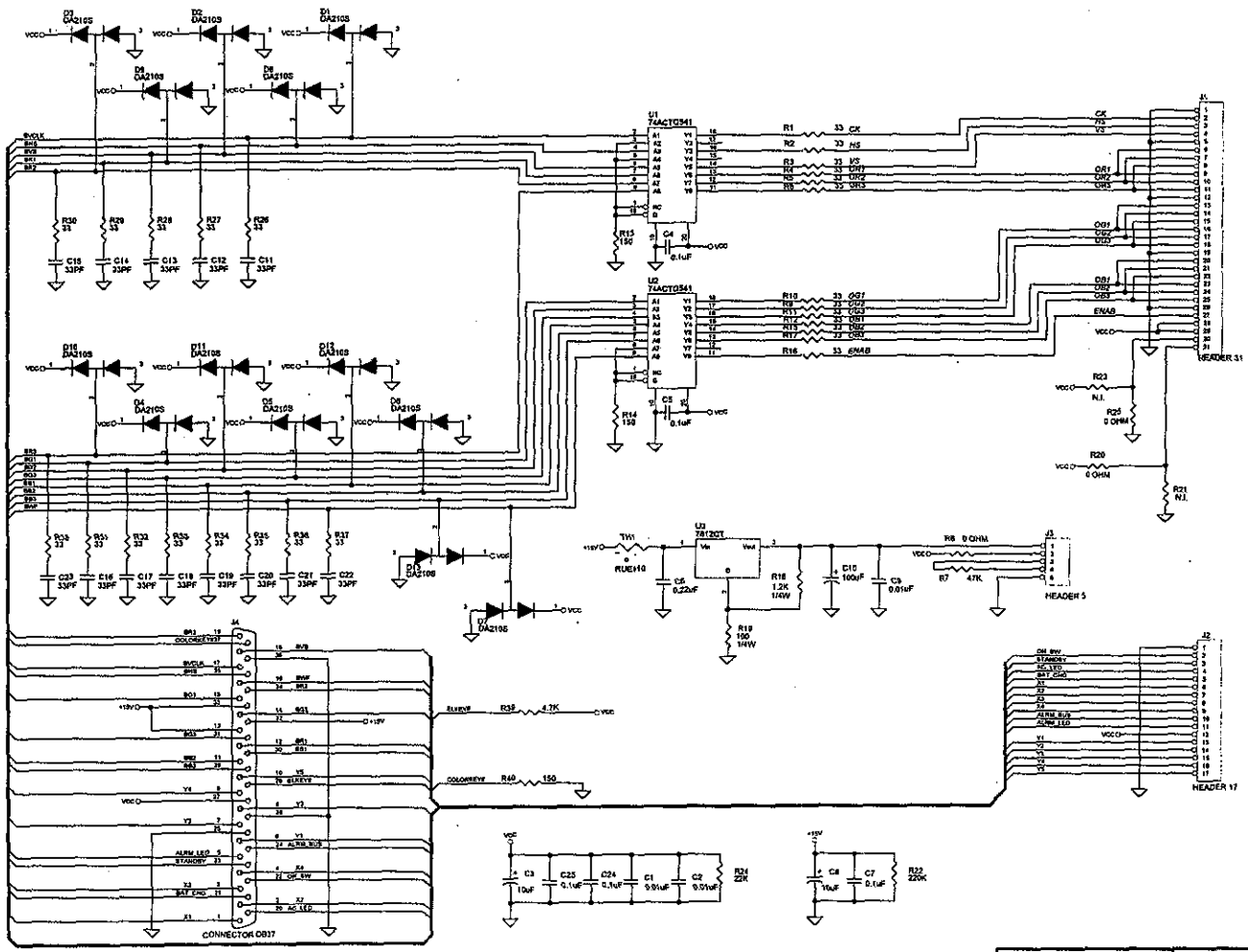
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE PER ECO# 2424	MH 09-30-96	
	B	ECO# 2534 (B/CH CHG)	MH 12-02-96	
	C	ECO#2549 (BOMS/CH CHG; C10,TH1,R1,12,15-17)	RT 12-13-96	



LAST USED

C25 D13 J4 R40
U3 TH1 R40

UNUSED LABELS

R21,23
R21,23

REFERENCE DRAWINGS

ASSY/BOM 402912
ARTWORK/FAB 402911

UNUSED COMPONENTSPARTS FLOWN

UNLESS OTHERWISE SPECIFIED
ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%
ALL CAPACITOR VALUES ARE IN MICROFARADS, 20%

APPROVALS	DATE
DRAWN MH	04-24-96
CHECKED	
APPROVED	

FILE NAME: 402912C.SCH

Medical Data Electronics

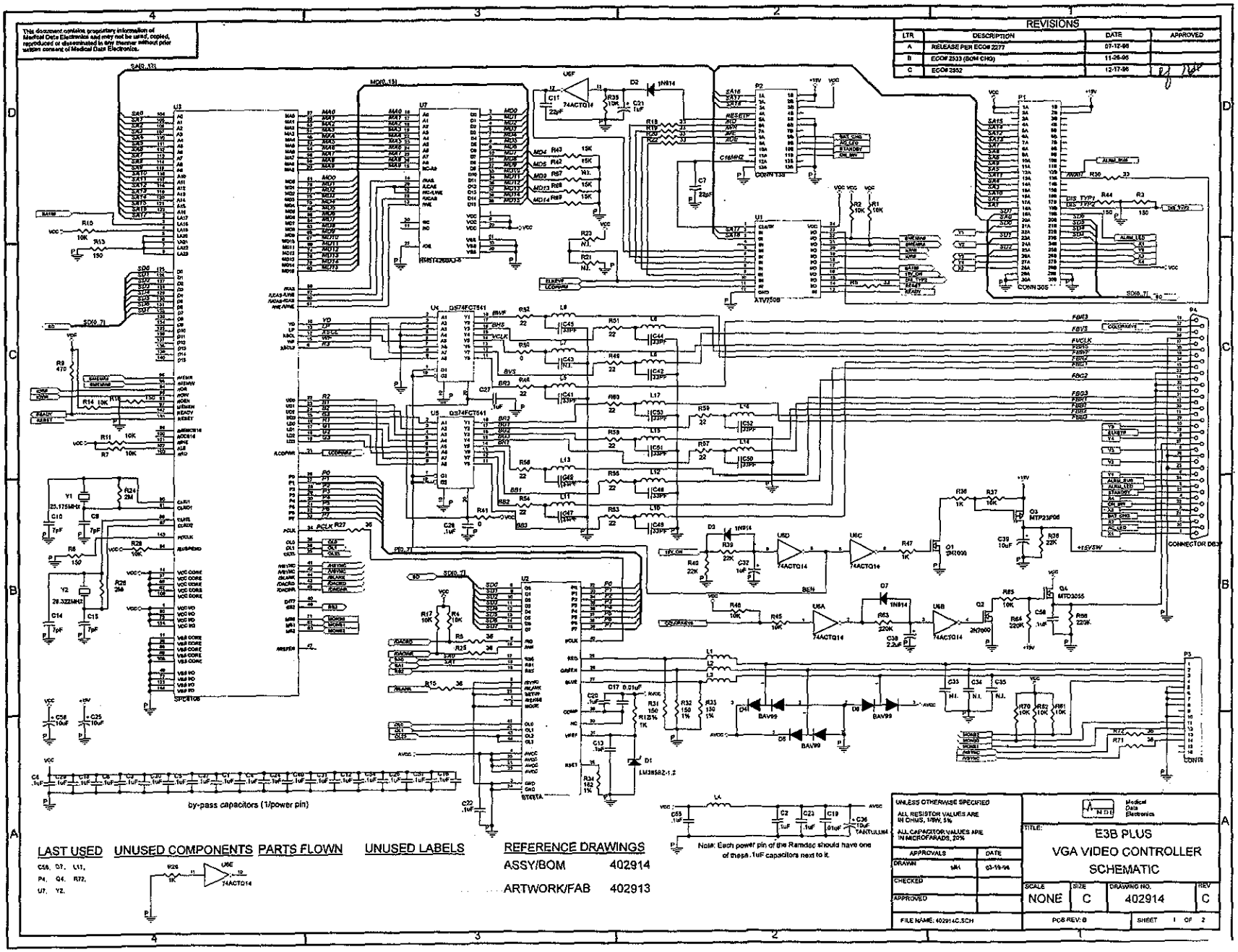
TITLE:
E3B PLUS
10.4 COLOR INTERFACE
SCHEMATIC

SCALE	SIZE	DRAWING NO.	REV
NONE	B	402912	C

PCB REV: A | SHEET 1 OF 2

402912-0000 PCBA, 10.4 COLOR INTERFACE, E3B PLUS REV. C(E2549)

MDE Part Number	Description	Quantity	Reference
352100-0103A	CAP, .01UF,50V,10%,RAD,X7R TAPE & REEL	3	C1,2,9
352100-0104A	CAP, .1UF,50V,10%,RAD,X7R TAPE & REEL	5	C4,5,7,24,25
352100-0224A	CAP, .22UF,50V,10%,RAD,X7R TAPE & REEL	1	C6
352202-0107A	CAP, 100uF,20%,25V,6.3x11mm,RAD,ELECT	1	C10
352400-0106A	CAP, 10UF,25V,20%,RAD,TANT	2	C3,8
354000-0102A	CONN, SNAP,R/A,SGL.ROW,SGL.PINS - 36-PINS	17	J2
354000-0438A	CONN, 5-POS,HDR,R/A,W/ LOCK	1	J3
354000-0460A	S*CONN, 31-POS,PIN HDR,1mm PITCH,SMD	1	J1
354000-0480A	CONN, 37-POS,D-SUB,PLUG,W/ THREADED INSERTS	1	J4
360300-0041A	FUSE, 1.10A RESETTABLE	1	THI
364000-0107A	IC, 7812 CT	1	U3
364000-0303A	S*IC, 74ACTQ541 OCTAL BUFFER SOIC20	2	U1,2
370100-0101A	RES, 100,1/4W,5%,CF TAPE & REEL	1	R19
370100-0122A	RES, 1.2K,1/4W,5%,CF TAPE & REEL	1	R18
370101-0000A	RES, 0 Ohm,1/8W,SHORTING,CF	3	R6,20,25
370101-0151A	RES, 150,1/8W,5%,CF TAPE & REEL	3	R13,14,40
370101-0223A	RES, 22K,1/8W,5%,CF TAPE & REEL	1	R24
370101-0224A	RES, 220K,1/8W,5%,CF TAPE & REEL	1	R22
370101-0330A	RES, 33,1/8W,5%,CF TAPE AND REEL	0	R12,15,16,17
370101-0330A	RES, 33,1/8W,5%,CF TAPE AND REEL	13	R1,2,3,4,5,8,9,10,11,
370101-0472A	RES, 4.7K,1/8W,5%,CF TAPE & REEL	1	R39
370101-0473A	RES, 47K,1/8W,5%,CF TAPE & REEL	1	R7
402911-0000	PCB, 10.4 COLOR INTERFACE, E3B PLUS REV. A(2424)	1	1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REVISIONS
LTR | DESCRIPTION | DATE | APPROVED
A | RELEASE PER ECO# 2277 | 07-12-96
B | ECO# 2533 (BOM CHG) | 11-26-96
C | ECO# 2552 | 12-17-96
by-pass capacitors (1/power pin)
Note: Each power pin of the Ramdac should have one of these .1uF capacitors next to it.
LAST USED
C58, D7, L11, P4, Q4, R72, U7, Y2.
UNUSED COMPONENTS
U6E
UNUSED LABELS
REFERENCE DRAWINGS
ASSY/BOM 402914
ARTWORK/FAB 402913
UNLESS OTHERWISE SPECIFIED
ALL RESISTOR VALUES ARE IN OHMS, 1/8W, 5%
ALL CAPACITOR VALUES ARE IN MICROFARADS, 20%
APPROVALS | DATE
DRAWN MH 03-19-96
CHECKED
APPROVED
FILE NAME: 402914C.SCH
Medical Data Electronics
TITLE:
E3B PLUS
VGA VIDEO CONTROLLER
SCHEMATIC
SCALE NONE | SIZE C | DRAWING NO. 402914 | REV C
PCB REV: B
SHEET 1 OF 2

402914-0000 PCBA, COLOR VIDEO CONTROLLER, E3B PLUS REV.C(E2552

MDE Part Number	Description	Quantity	Reference
352405-0225A	S*CAP, 2.2uF,20%,16V,TANT,SMD	1	C38
352406-0105A	S*CAP, 1.0uF,20%,25V,TANT,SMD	2	C21,32
352406-0106A	S*CAP, 10uF,20%,25V,TANT,SMD	2	C25,39
352407-0106A	S*CAP, 10uF,20%,16V,TANT,SMD	1	C58
352600-0043A	S*CAP, 0.1uF,10%,50V,CER X7R 1206	0	C20,24,26,27,28,29,30
352600-0043A	S*CAP, 0.1uF,10%,50V,CER X7R 1206	0	C31,37,40,54,55,56,57
352600-0043A	S*CAP, 0.1uF,10%,50V,CER X7R 1206	23	C1,3,4,5,6,8,12,16,18
352701-0220A	S*CAP, 22pF,5%,50V,NPO,CER,0805,SMD	2	C7,11
352701-0330A	S*CAP, 33pF,5%,50V,NPO,CER,0805,SMD	0	C49,50,51,52,53
352701-0330A	S*CAP, 33pF,5%,50V,NPO,CER,0805,SMD	12	C41,42,44,45,46,47,48
352701-07R0A	S*CAP, 7pF,+\-0.5pf,50V,NPO,CER,0805,SMD	4	C9,10,14,15
354000-0263A	CONN, FEMALE 60 PIN	1	P1
354000-0436A	CONN, 26-PIN,HIGH DENSITY SOCKET	1	P2
354000-0442A	CONN, 37-POS,D-SUB,R/A,PCMNT	1	P4
356000-0057A	S*XTAL, 28.322MHZ, QUARTZ,SMD	1	Y2
356000-0058A	S*XTAL, 25.175MHZ, QUARTZ,SMD	1	Y1
356000-0059A	S*FILTER, EMI,70 OHMS,@100MHZ,SMD,1206 PKG	0	L14,15,16,17,7
356000-0059A	S*FILTER, EMI,70 OHMS,@100MHZ,SMD,1206 PKG	13	L5,6,8,9,10,11,12,13
364000-0348A	S*IC, 74FCT541 HIGH SPEED TRISTATE BUFFER	2	U4,5
364000-0351A	S*IC, SPC8106FOB,LCD/CRT VGA CNTRLLR,144-P,QFP,SMD	1	U3
364000-0352A	S*IC, 74ACTQ14SOIC,HEX SCHMITT TRIGGER,QUIET,SMD	1	U6
364000-0353A	S*IC, DRAM,256KBx16,70ns,2CAS/1WE,SOJ,SMD	1	U7
364000-0354A	S*IC, ATV750B,24-PIN,SOIC,.300 WIDE,SMD	1	U1
370600-00R0A	S*RES, 0,0.1W,5%,0805,SMD	2	R41,50
370600-0102A	S*RES, 1K,0.1W,5%,0805,SMD	3	R29,36,47
370600-0103A	S*RES, 10K,0.1W,5%,0805,SMD	0	R37,45,46,65
370600-0103A	S*RES, 10K,0.1W,5%,0805,SMD	12	R1,2,7,10,11,14,28,35
370600-0151A	S*RES, 150,0.1W,5%,0805,SMD	5	R3,8,13,16,44
370600-0153A	S*RES, 15K,0.1W,5%,0805,SMD	4	R42,43,68,69
370600-0205A	S*RES, 2.0M,0.1W,5%,0805,SMD	2	R24,26
370600-0220A	S*RES, 22,0.1W,5%,0805,SMD	0	R56,57,58,59,60
370600-0220A	S*RES, 22,0.1W,5%,0805,SMD	12	R48,49,51,52,53,54,55
370600-0223A	S*RES, 22K,0.1W,5%,0805,SMD	3	R38,39,40
370600-0224A	S*RES, 220K,0.1W,5%,0805,SMD	3	R63,64,66
370600-0330A	S*RES, 33,0.1W,5%,0805,SMD	6	R6,18,19,20,22,30
370600-0471A	S*RES, 470,0.1W,5%,0805,SMD	1	R9
376000-0019A	XSTR, 2N7000,FET	2	Q1,2
376000-0038A	S*XSTR, MTD3055E,N-CHANNEL FET,8A,60V,SMD	1	Q4
376000-0039A	XSTR,P-CHAN PWR MSFT 60V RDS(ON)<0.22 OHM TO-220AB	1	Q3
378000-0005A	DIO, 1N914,SIGNAL T&R	3	D2,3,7
402913-0000	PCB, COLOR VIDEO CONTROLLER,E3B PLUS REV. B(E2552)	1	1

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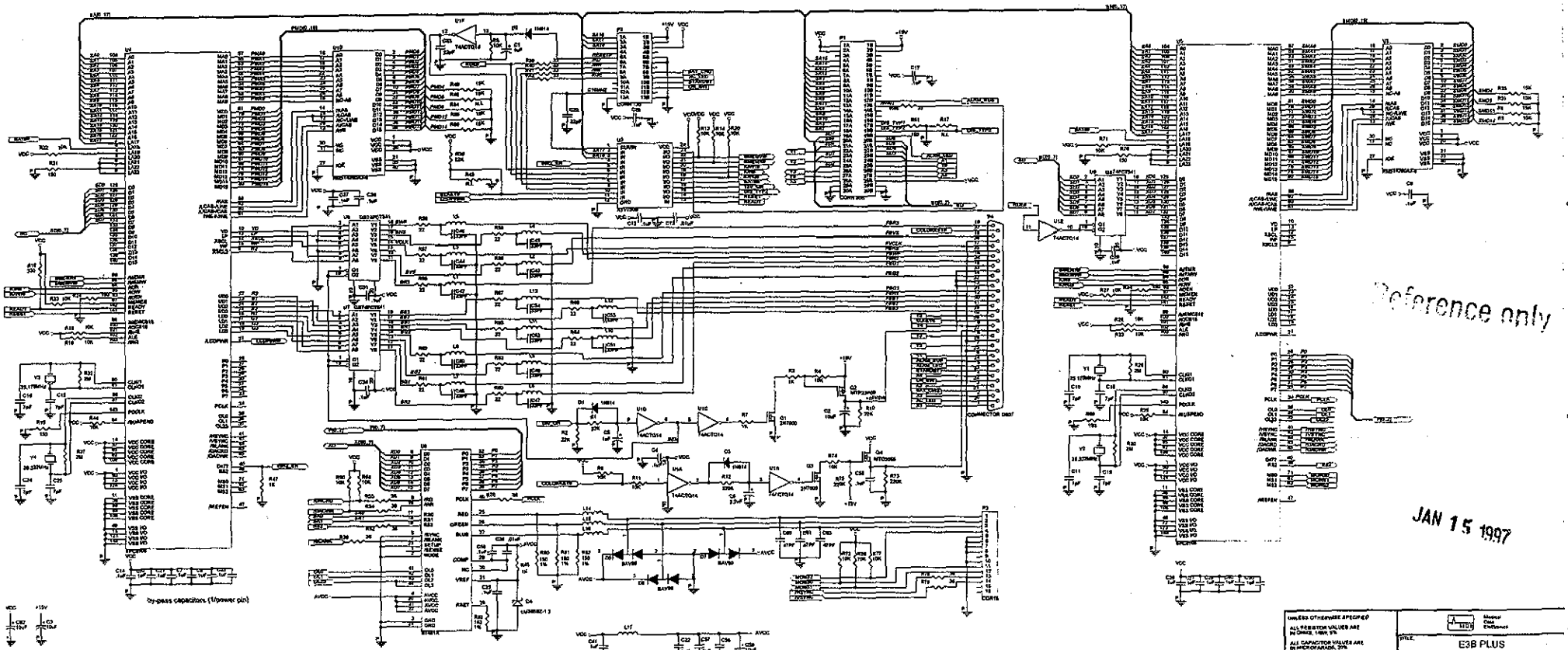
REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	RELEASE PER ECO# 3424	08-30-96	
B	ECO# 2534 (NOM CHG)	12-02-96	



Reference only

JAN 15 1997

LAST USED | UNUSED COMPONENTS | PARTS FLOWN | UNUSED LABELS

REFERENCE DRAWINGS

ASSY/BOM	402923
ARTWORK/FAB	402922

UNLESS OTHERWISE SPECIFIED
ALL RESISTOR VALUES ARE IN OHMS, 1/8W, 5%
ALL CAPACITOR VALUES ARE IN MICROFARADS, 5%

APPROVALS	DATE
DRAWN	
CHECKED	
APPROVED	

File NAME 402923.SCH

Medical Data Electronics

TITLE:
E3B PLUS
10.4 VGA EL VIDEO CONTROLLER
SCHEMATIC

SCALE	SIZE	DRAWING NO	REV
NONE	C	402923	B

PCB REV: A | SHEET 4-23

402923-0000 PCBA, VIDEO CNTRLLR EL E3B+ PRISM REV.B(E2534)

MDE Part Number	Description	Quantity	Reference
352405-0225A	S*CAP, 2.2uF,20%,16V,TANT,SMD	1	C6
352406-0105A	S*CAP, 1.0uF,20%,25V,TANT,SMD	2	C1,5
352406-0106A	S*CAP, 10uF,20%,25V,TANT,SMD	2	C2,3
352407-0106A	S*CAP, 10uF,20%,16V,TANT,SMD	1	C62
352600-0043A	S*CAP, 0.1uF,10%,50V,CER X7R 1206	0	C28,31,32,33,34,36,37
352600-0043A	S*CAP, 0.1uF,10%,50V,CER X7R 1206	0	C55
352600-0043A	S*CAP, 0.1uF,10%,50V,CER X7R 1206	16	C4,7,8,12,14,17,26,27
352701-0220A	S*CAP, 22pF,5%,50V,NPO,CER,0805,SMD	2	C20,23
352701-0330A	S*CAP, 33pF,5%,50V,NPO,CER,0805,SMD	0	C49,50,51,52,53,54
352701-0330A	S*CAP, 33pF,5%,50V,NPO,CER,0805,SMD	13	C42,43,44,45,46,47,48
352701-07R0A	S*CAP, 7pF,+\-0.5pf,50V,NPO,CER,0805,SMD	4	C15,16,24,25
352704-0103A	S*CAP, 10000pF,10%,50V,X7R,CER,0805,SMD	1	C13
354000-0263A	CONN, FEMALE 60 PIN	1	P1
354000-0436A	CONN, 26-PIN,HIGH DENSITY SOCKET	1	P2
354000-0442A	CONN, 37-POS,D-SUB,R/A,PCMNT	1	P4
356000-0057A	S*XTAL, 28.322MHZ, QUARTZ,SMD	1	Y4
356000-0058A	S*XTAL, 25.175MHZ, QUARTZ,SMD	1	Y3
356000-0059A	S*FILTER, EMI,70 OHMS,@100MHZ,SMD,1206 PKG	0	L11,12,13
356000-0059A	S*FILTER, EMI,70 OHMS,@100MHZ,SMD,1206 PKG	13	L1,2,3,4,5,6,7,8,9,10
364000-0348A	S*IC, 74FCT541 HIGH SPEED TRISTATE BUFFER	2	U6,7
364000-0351A	S*IC, SPC8106FOB,LCD/CRT VGA CNTRLLR,144-P,QFP,SMD	1	U4
364000-0352A	S*IC, 74ACTQ14SOIC,HEX SCHMITT TRIGGER,QUIET,SMD	1	U1
364000-0353A	S*IC, DRAM,256KBx16,70ns,2CAS/1WE,SOJ,SMD	1	U10
364000-0354A	S*IC, ATV750B,24-PIN,SOIC,.300 WIDE,SMD	1	U3
370600-0102A	S*RES, 1K,0.1W,5%,0805,SMD	3	R3,7,47
370600-0103A	S*RES, 10K,0.1W,5%,0805,SMD	0	R20,22,23,44,74
370600-0103A	S*RES, 10K,0.1W,5%,0805,SMD	13	R4,5,6,11,13,14,18,19
370600-0151A	S*RES, 150,0.1W,5%,0805,SMD	5	R15,21,24,51,69
370600-0153A	S*RES, 15K,0.1W,5%,0805,SMD	4	R48,49,85,86
370600-0205A	S*RES, 2.0M,0.1W,5%,0805,SMD	2	R32,37
370600-0220A	S*RES, 22,0.1W,5%,0805,SMD	0	R62,63,64,65,66,67
370600-0220A	S*RES, 22,0.1W,5%,0805,SMD	13	R55,56,57,58,59,60,61
370600-0223A	S*RES, 22K,0.1W,5%,0805,SMD	4	R1,2,10,36
370600-0224A	S*RES, 220K,0.1W,5%,0805,SMD	3	R12,73,75
370600-0330A	S*RES, 33,0.1W,5%,0805,SMD	5	R39,40,41,42,46
370600-0331A	S*RES, 330,0.1W,5%,0805,SMD	1	R16
376000-0019A	XSTR, 2N7000,FET	2	Q1,3
376000-0038A	S*XSTR, MTD3055E,N-CHANNEL FET,8A,60V,SMD	1	Q4
376000-0039A	XSTR,P-CHAN PWR MSFT 60V RDS(ON)<0.22 OHM TO-220AB	1	Q2
378000-0005A	DIO, 1N914,SIGNAL T&R	3	D1,2,3
402922-0000	PCB, VIDEO CNTRLLR,EL VGA,E3B+ PRISM REV. A(E2424)	1	1

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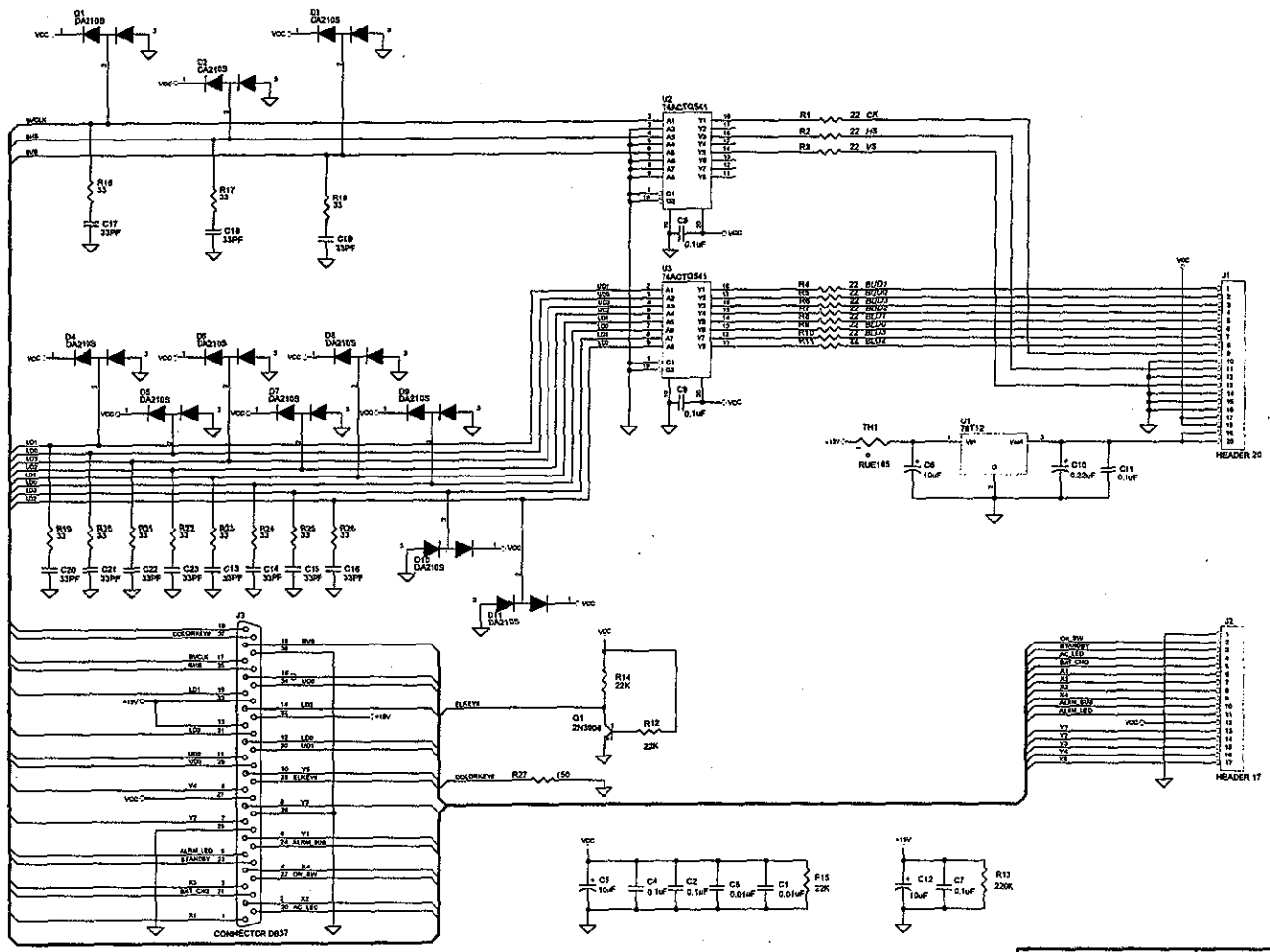
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELESE PER ECO# 2424	MH 09-30-96	
	B	ECO# 2534 (BOM CHG)	MH 12-02-96	



LAST USED

R27 C23 D11 Q1

U3 J3 TH1

UNUSED LABELS

UNUSED COMPONENTS PARTS FLOWN

REFERENCE DRAWINGS

ASSY/BOM	402925
ARTWORK/FAB	402924

UNLESS OTHERWISE SPECIFIED
ALL RESISTOR VALUES ARE IN OHMS, 1/8W, 5%
ALL CAPACITOR VALUES ARE IN MICROFARADS, 20%

APPROVALS	DATE
DRAWN MH	06-05-96
CHECKED	
APPROVED	

Medical Data Electronics

TITLE: E3B PLUS 10.4 EL VGA INTERFACE SCHEMATIC

SCALE	SIZE	DRAWING NO.	REV
NONE	B	402925	B

FILE NAME: 402925B.SCH | PCB REV: A | SHEET 1 OF 2

402925-0000 PCBA, EL VGA INTERFACE,E3B+ PRISM REV. B(E2534)

MDE Part Number	Description	Quantity	Reference
352100-0103A	CAP, .01UF,50V,10%,RAD,X7R TAPE & REEL	2	C1,5
352100-0104A	CAP, .1UF,50V,10%,RAD,X7R TAPE & REEL	6	C2,4,7,8,9,11
352100-0224A	CAP, .22UF,50V,10%,RAD,X7R TAPE & REEL	1	C10
352400-0106A	CAP, 10UF,25V,20%,RAD,TANT	3	C3,6,12
354000-0102A	CONN, SNAP,R/A,SGL.ROW,SGL.PINS - 36-PINS	17	J2
354000-0106A	CONN, DBL ROW,STRT,SGL PIN,SNAP-AWAY 36-PINS	20	J1
354000-0480A	CONN, 37-POS,D-SUB,PLUG,W/ THREADED INSERTS	1	J3
360300-0040A	FUSE, 1.85A RESETTABLE	1	TH1
364000-0303A	S*IC, 74ACTQ541 OCTAL BUFFER SOIC20	2	U2,3
364000-0360A	IC, 78T12CT,REGULATOR,12V,3A	1	U1
370101-0151A	RES, 150,1/8W,5%,CF TAPE & REEL	1	R27
370101-0220A	RES, 22,1/8W,5%,CF TAPE AND REEL	0	R11
370101-0220A	RES, 22,1/8W,5%,CF TAPE AND REEL	11	R1,2,3,4,5,6,7,8,9,10
370101-0223A	RES, 22K,1/8W,5%,CF TAPE & REEL	3	R12,14,15
370101-0224A	RES, 220K,1/8W,5%,CF TAPE & REEL	1	R13
376000-0003A	XSTR, 2N3904	1	Q1
402924-0000	PCB, EL VGA INTERFACE,E3B+ PRISM REV. A(E2424)	1	1

5 Multiparameter Module (MPM)

5.1 Overview

The ESCORT II Model 20001 Multiparameter Module (MPM) houses all installed parameter boards, and provides easy accessibility to each. A fully loaded MPM can accommodate ECG, Respiration, SpO_2, two (2) Invasive Blood Pressures, Noninvasive Blood Pressure, Temperature, Mainstream/Sidestream CO_2, and Cardiac Output.

The MPM is easily removed by grasping the two tabs on either side of the MPM and squeezing inward while pulling the MPM straight out of the ESCORT II monitor. The parameter boards are then accessible by removing the four Phillips screws securing the MPM cover plate and removing the cover plate.

5.2 MPM Options

Table 5-1 presents the options available for the Multiparameter Module. To add a new parameter, contact MDE Technical Support. Figures 5-1 through 5-10 present the various parameter options listed. Each parameter board is discussed in one of the following chapters.

Table 5-1: Multiparameter Module Options

Model 20001 Multiparameter Module with Dual Vector ECG	
Option	**Description**
27	Add Respiration
28	Add Noninvasive Blood Pressure (NIBP)
29	Add Noninvasive Blood Pressure (NIBP) and Temperature
30	Add SpO2
31	Add One (1) Invasive Blood Pressure (IBP)
32	Add One (1) Invasive Blood Pressure (IBP) and Temperature
33	Add Two (2) Invasive Blood Pressure (IBP)
34	Add Two (2) Invasive Blood Pressure (IBP) and Temperature
35	Add Temperature
36	Add CO2 (Note: Requires Mainstream or Sidestream ETCO2 sensor, sold separately)
38	Add HP Merlin Connectors (ECG and IBP only)
39	Add Cardiac Output (CO)

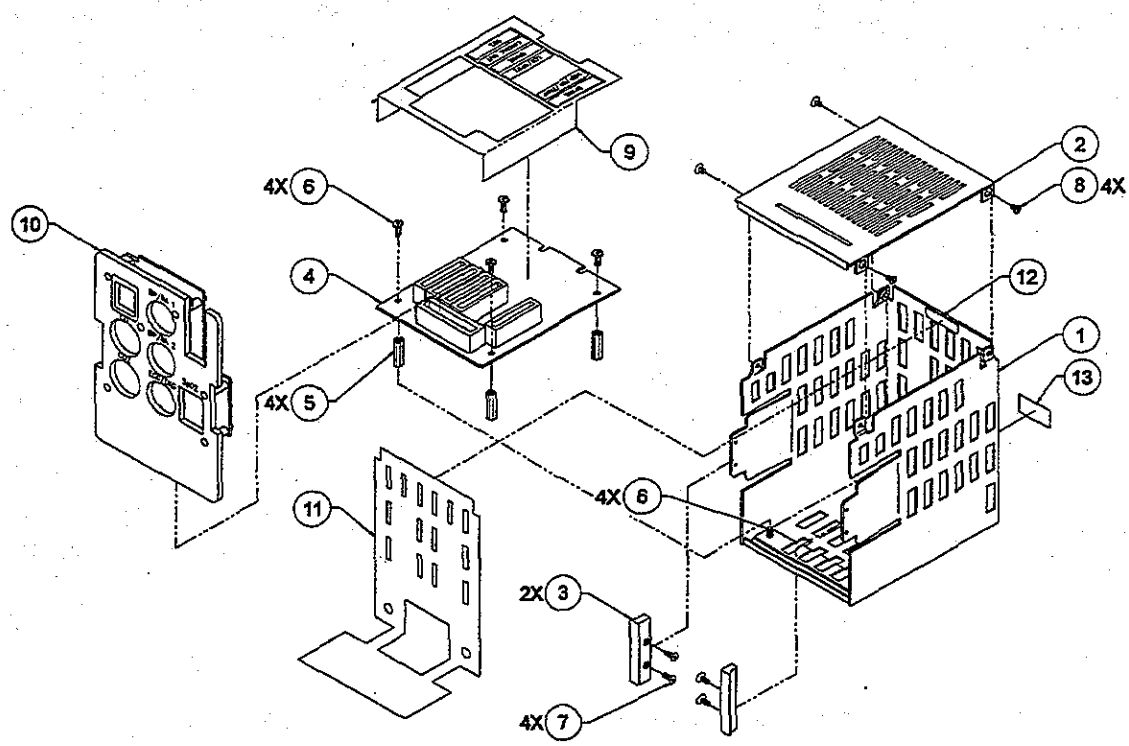


Figure 5-1: Multiparameter Module - Exploded View

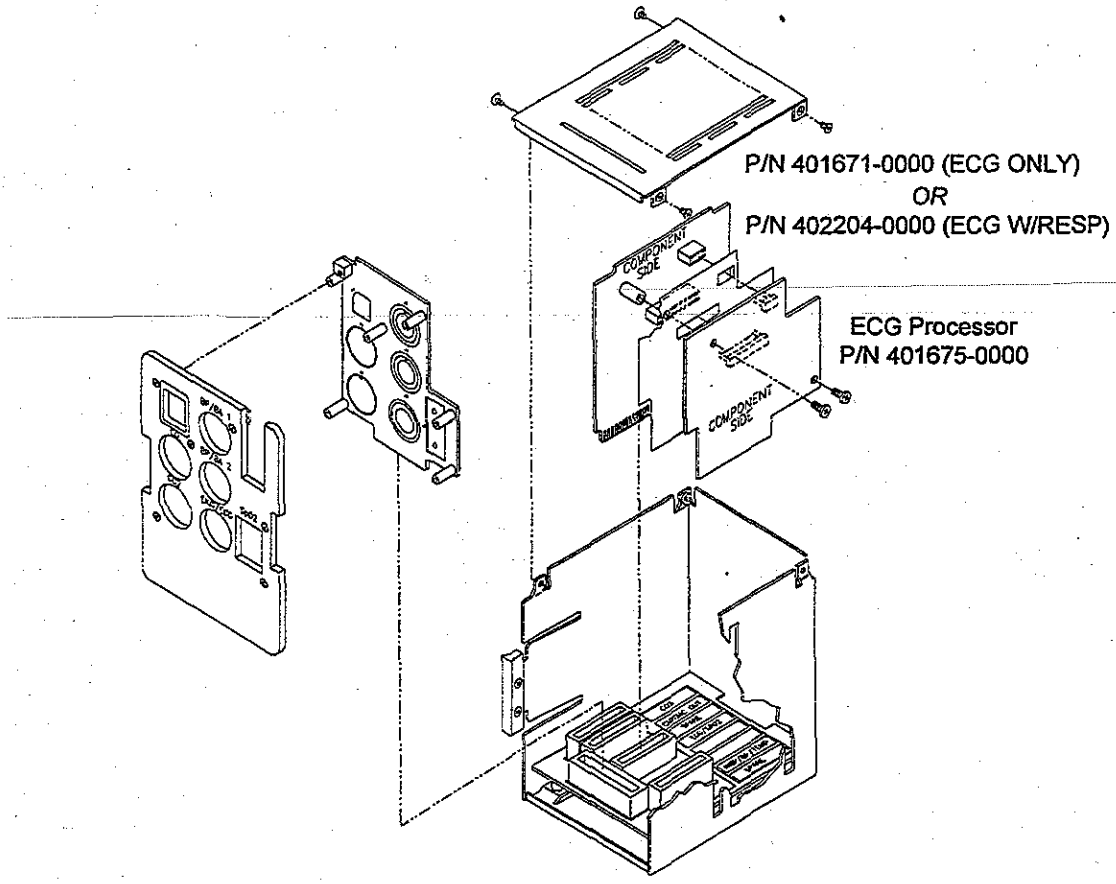


Figure 5-2: ECG Only & ECG/Respiration Options - Exploded View

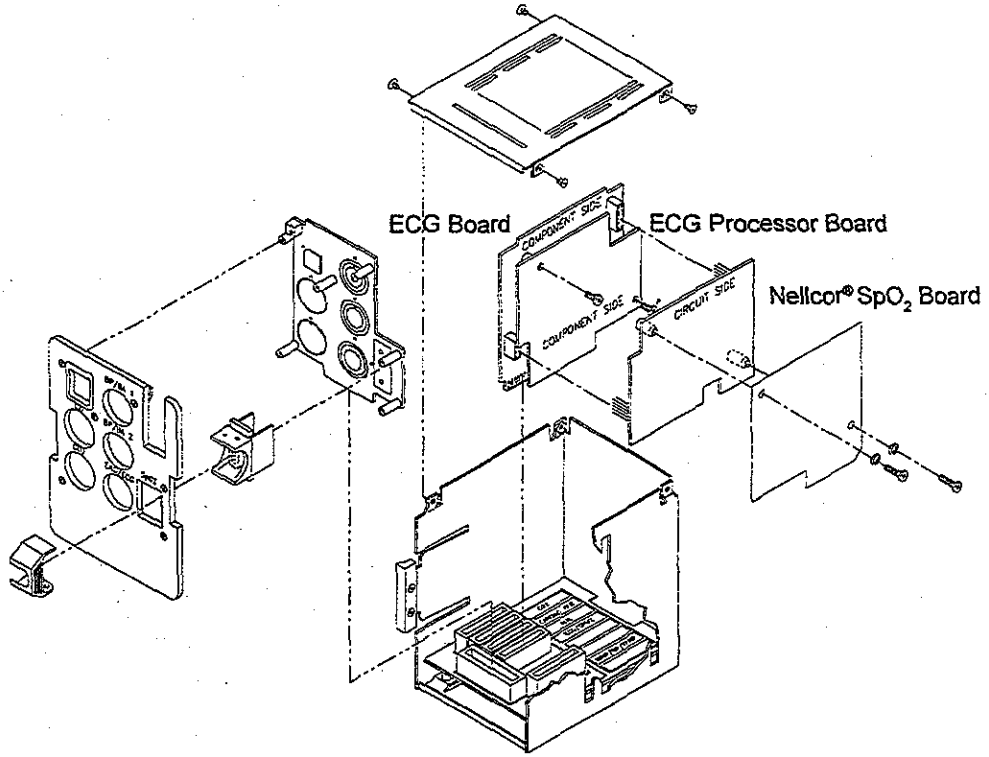


Figure 5-3: SpO_2 Option - Exploded View

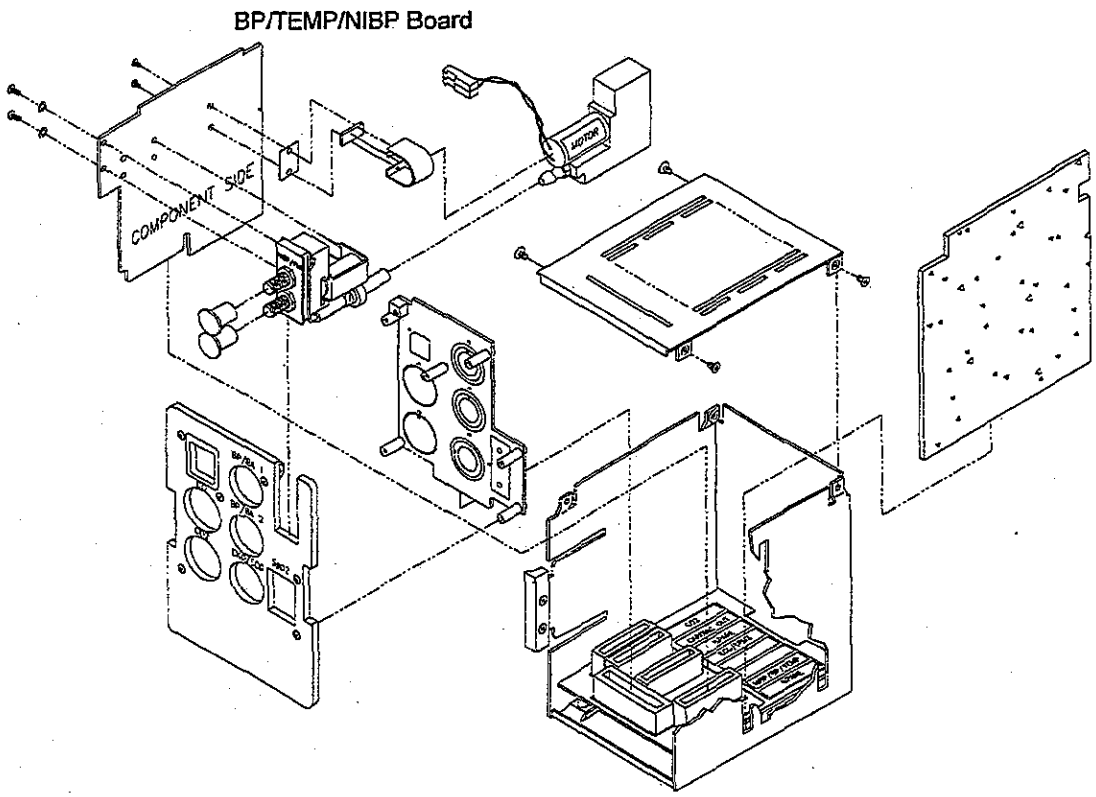


Figure 5-4: Noninvasive Blood Pressure Option - Exploded View

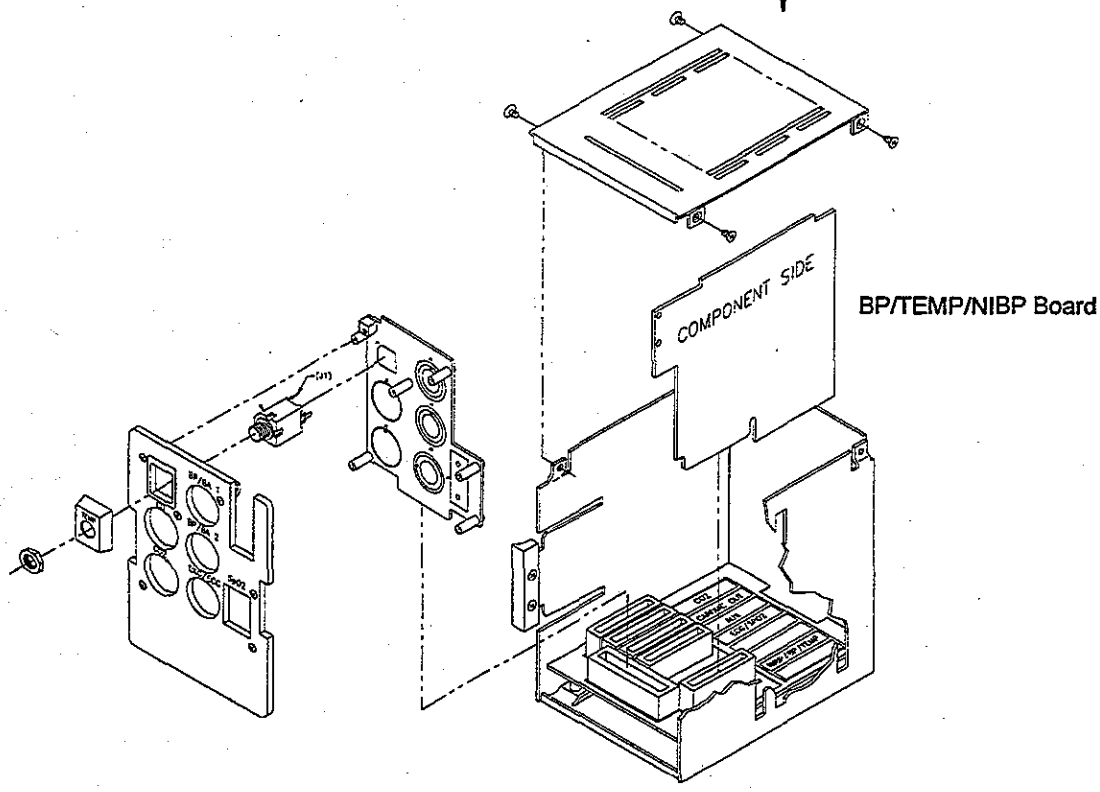


Figure 5-5: Temperature Option - Exploded View

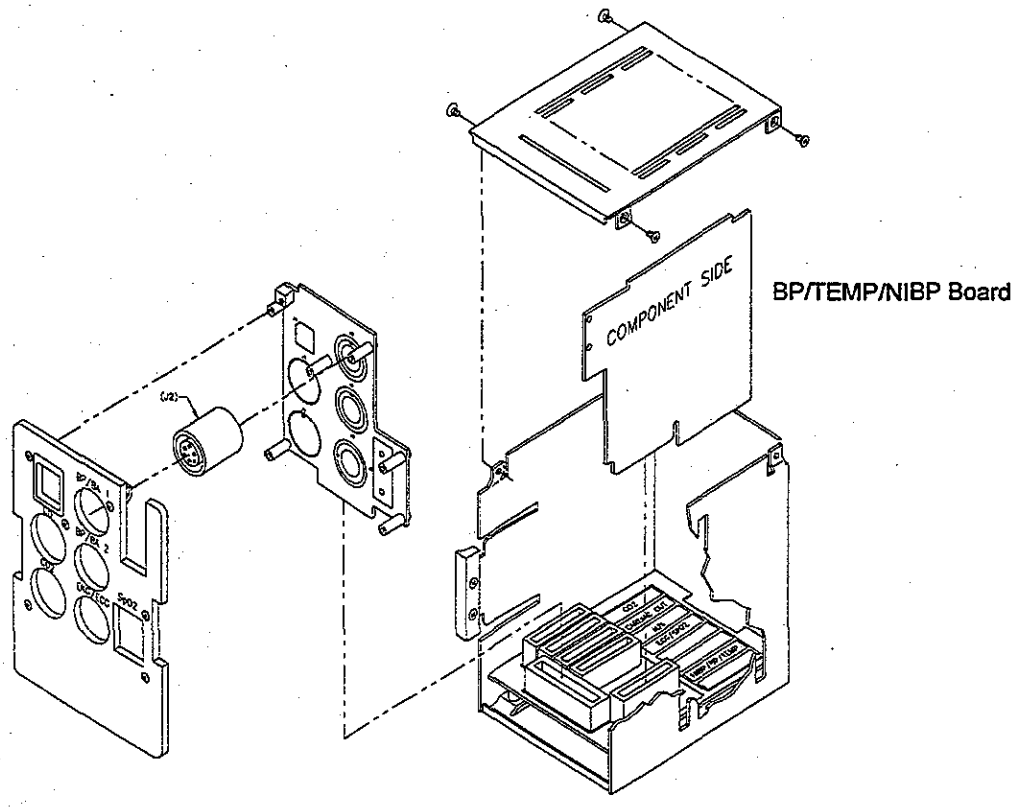


Figure 5-6: One Invasive Blood Pressure Option - Exploded View

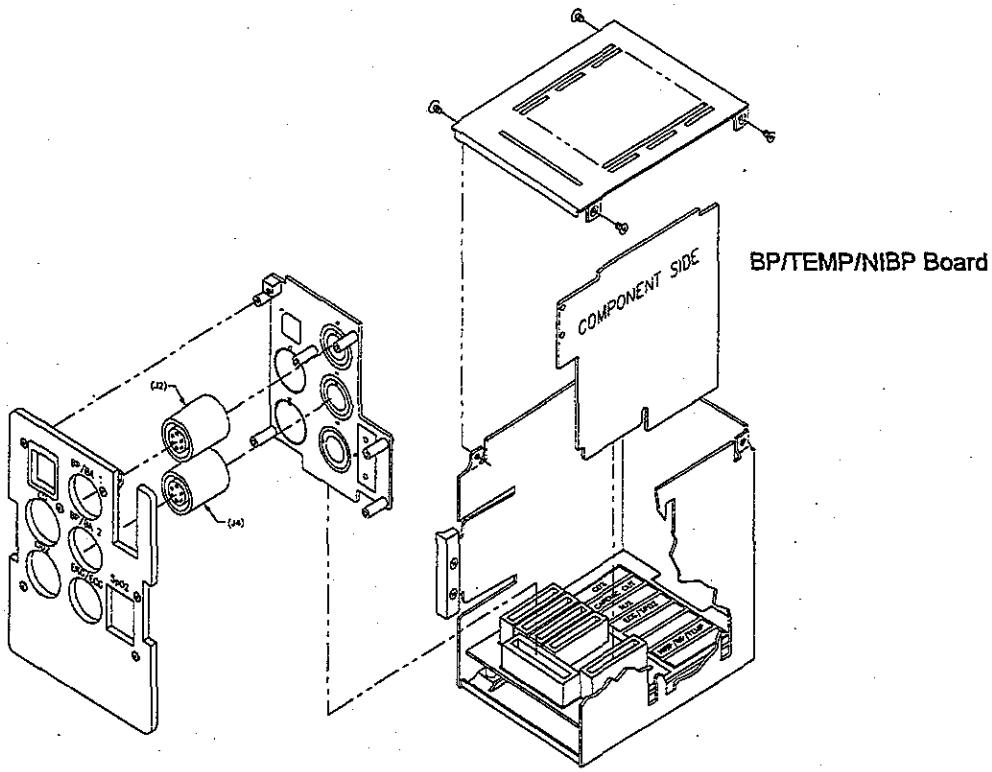


Figure 5-7: Two Invasive Blood Pressure Option - Exploded View

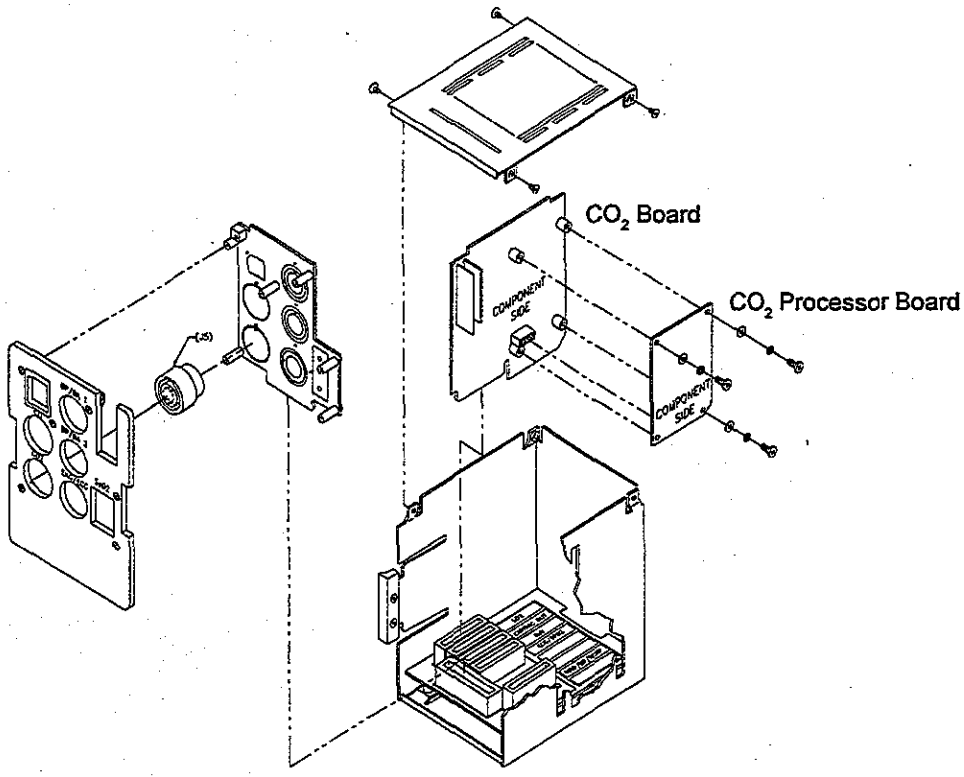


Figure 5-8: CO_2 Option - Exploded View

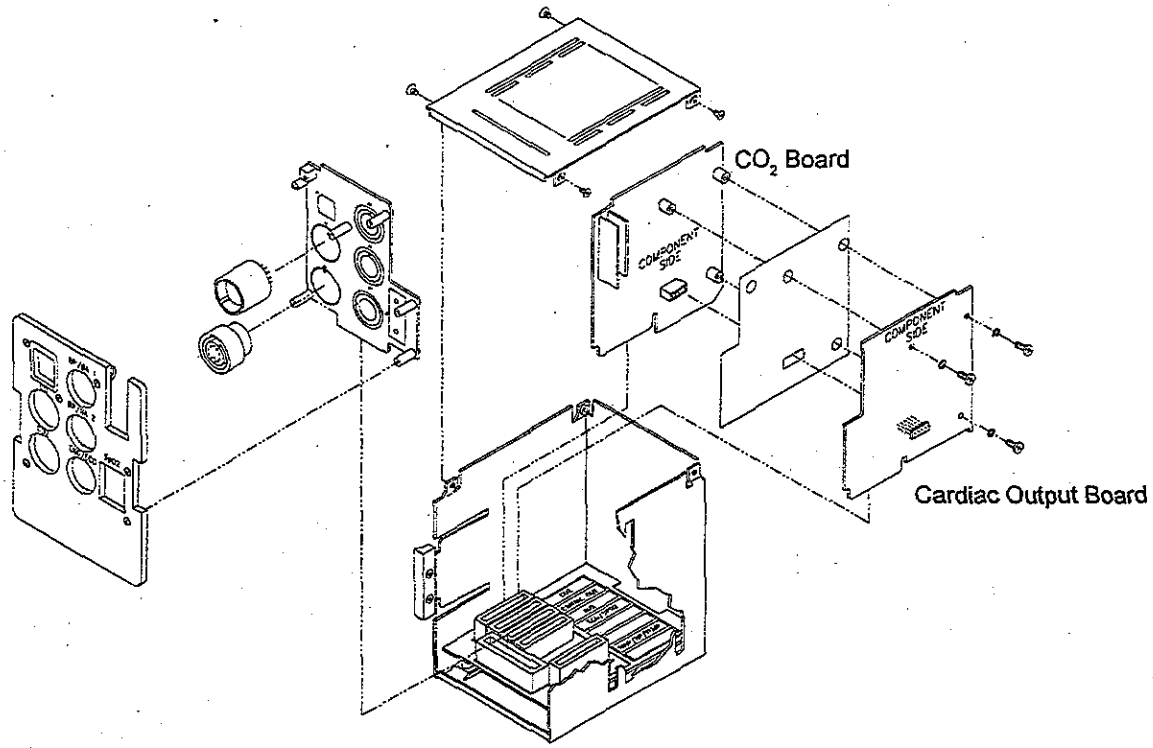


Figure 5-9: CO_2 with Cardiac Output Option - Exploded View

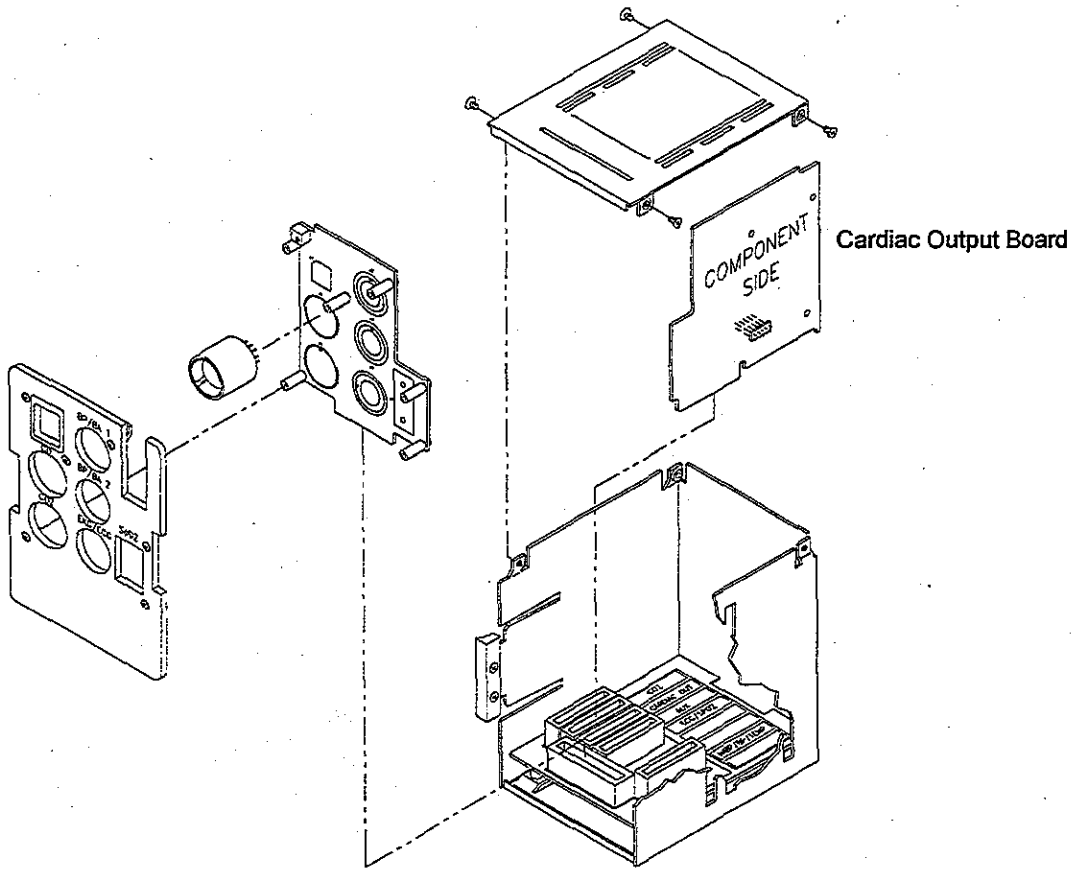


Figure 5-10: Cardiac Output Option - Exploded View

Table 5-2: MPM Housing Assembly (reference Figure 5-1)

MDE Part Number	Description	Quantity	Reference
358100-0036A	SCR, 4-40 X 1/4,PH PNHD,ZINC OR ANY	4	6 - PCBA
358100-0130A	SCR, PLASTITE,2 x 3/16~LG, 82 DEG,FLH PHL STL BLK	4	7 - HANDLE
358100-0151A	SCR, 4-40 x 3/16~LG 82DEG.FLH PHL SS	4	8 - COVER
360500-0149A	SPCR, NYLON 4-40 THREADED THRU 3/16~DIAx 11/16	4	5 - PCBA
384000-0176A	TAPE, ADHESIVE TRANSFER 1/4~ WIDE X 60 YD ROLL	0	12 - 1 PC
401688-0000	BRICK HANDLE MOLDED E3B/E2B REV B (E1432)	2	3
401700-0000	BRICK HOUSING E2B/E3B REV E (E1857)	1	1
401702-0000	BRICK COVER MOLDED E3B/E2B REV C (E1527)	1	2
401714-0000	PCBA, BRICK ISOLATION POWER SUPPLY REV H (E1626A)	1	4
401977-0000	FISH PAPER, BRICK ISO PWR SPPLY REV C (E1559)	1	9
401978-0000	LBL, SERIAL #, 1/2~ x 1~,E2B/E3B REV. B (E1612)	1	13
402205-0000	BRICK CONNECTOR PLATE ASSY REV E (E1828)	1	10
402247-0000	FISH PAPER BRICK HSNG REV A (E1559)	1	11

5.3 Connector Plate Assembly

The Connector Plate Assembly includes the MPM Connector Board, connectors to support all purchased parameter options, and the connector plate itself. The MPM Connector Plate may also be configured for use with Hewlett-Packard Merlin type connectors (ECG and IBP only).

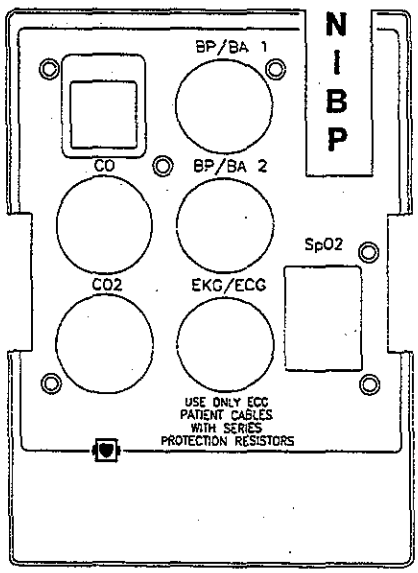


Figure 5-11: MPM Connector Plate (ECG, SpO_2, 2 BPs, TEMP, CO_2, CO, NIBP)

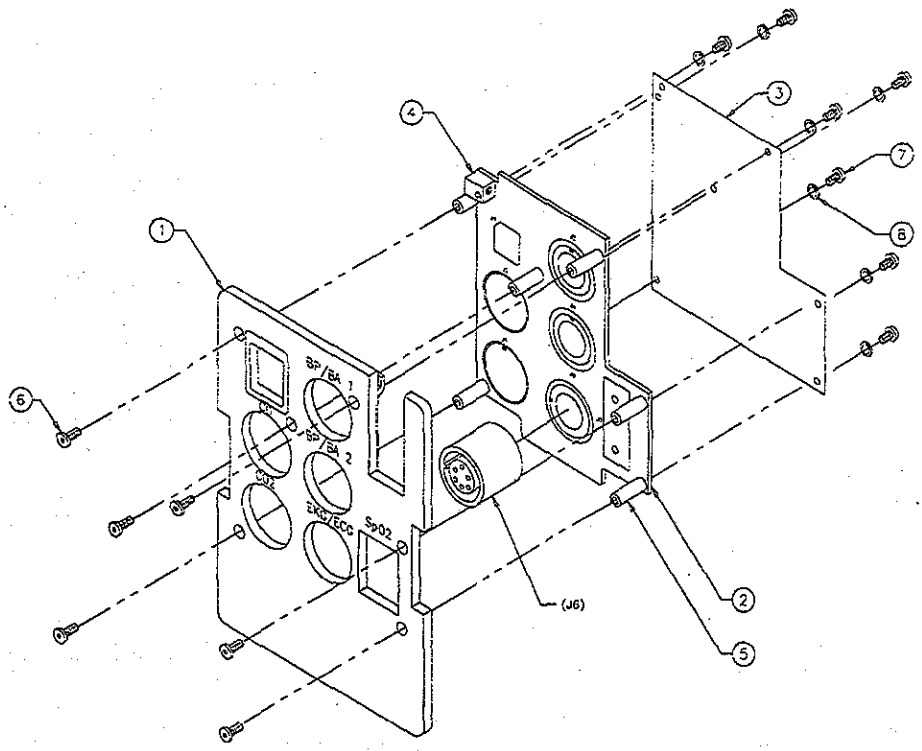


Figure 5-12: Connector Plate Assembly

Table 5-3: Parts Listing, P/N 402205-0000, Model 20001 Connector Plate Assembly

MDE Part Number	Description	Quantity	Reference
358100-0036A	SCR, 4-40 X 1/4,PH PNHD,ZINC OR ANY	7	7
358100-0126A	SCR, 4-40 x 3/16~LG,SKTHD BLK	6	6
360500-0109A	STNDOFF, 4-40 x .540LG x 3/16~ DIA NYL	6	5
401488-0000	CONN, ECG,F,6-P,PCMNT,MOLDED,E2B/E3B REV. B (E1432)	1	J6
401868-0000	CHASSIS GROUND BLOCK, BRICK REV. A (E1333)	1	4
401923-0000	PCBA, BRICK CONNECTOR REV G (E1781)	1	2
401942-0000	FAB*CONN PLT 3LD ECG,2BP,1T,SaO2,CO2,CO REV. D (1856)	1	1
402022-0000	FISH PAPER, BRICK CONNECTOR BD. REV B (E1559)	1	3

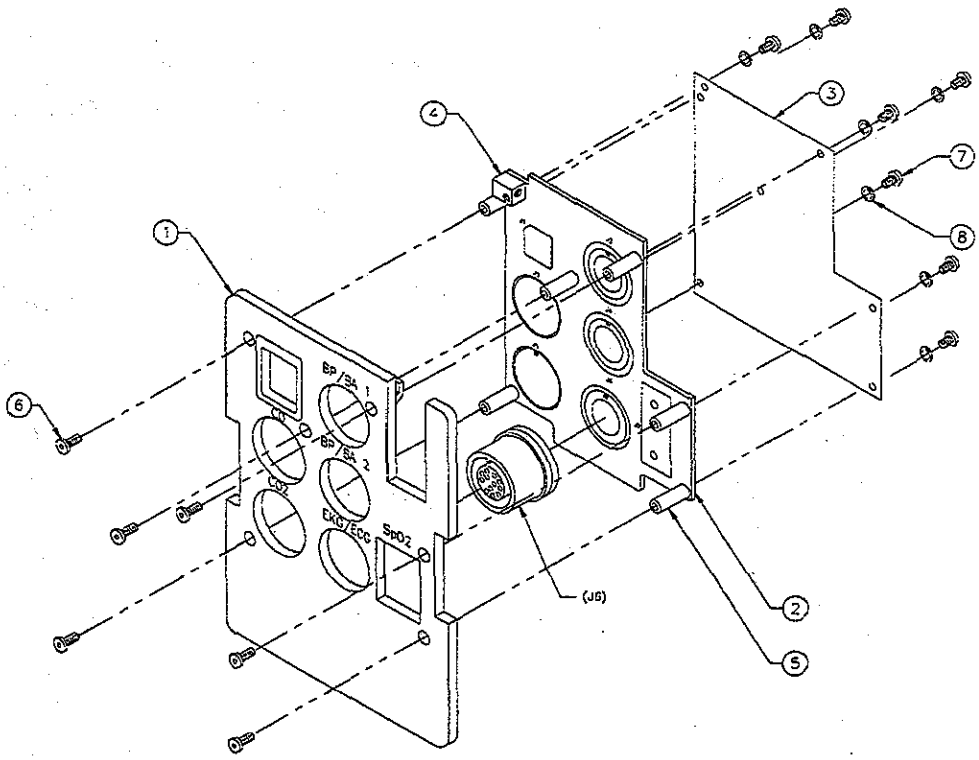


Figure 5-13: Hewlett-Packard Connector Plate Assembly

Table 5-4: Parts Listing, P/N 402290-0000, Model 20001 HP Connector Plate Assembly

MDE Part Number	Description	Quantity	Reference
358100-0036A	SCR, 4-40 X 1/4,PH PNHD,ZINC OR ANY	7	7
358100-0126A	SCR, 4-40 x 3/16~LG,SKTHD BLK	6	6
360500-0109A	STNDOFF, 4-40 x .540LG x 3/16~ DIA NYL	6	5
401868-0000	CHASSIS GROUND BLOCK, BRICK REV. A(E1333)	1	4
401942-0000	CONN PLATE 3LD ECG,2BP,1T,SaO2,CO2,CO REV D (1856)	1	1
402022-0000	FISH PAPER, BRICK CONNECTOR BD. REV B (E1559)	1	3
402212-0000	PCBA, HP BRICK CONN REV D (E1781)	1	2
402288-0000	FAB CONN HP MERLIN ECG - BRICK REV. A (E1588)	1	J6

5.3.1 MPM Connector Board

The MPM Connector Board acts as an interface between patient cable connections and the ESCORT II monitor. All signals are routed from the various input connectors to the cardedge connector P1 which connects to the MPM ISO Power Supply.

ECG inputs are protected by surge arrestors DS2 - DS6 against possible external potentials of up to 80 VAC. DS1 connects between each surge arrestor and the isolation barrier, providing a discharge path. DS1 is also used to complete protection to the IBP and Temperature inputs. Diodes D1, D7, and D8 provide protection against an external potential of 24 VAC for IBP Channel 1. D13, D14, and D15 give protection for IBP Channel 2. Diodes D6, D9, and D11 render protection for the Temperature inputs. L1 - L55 are EMI suppression filters.

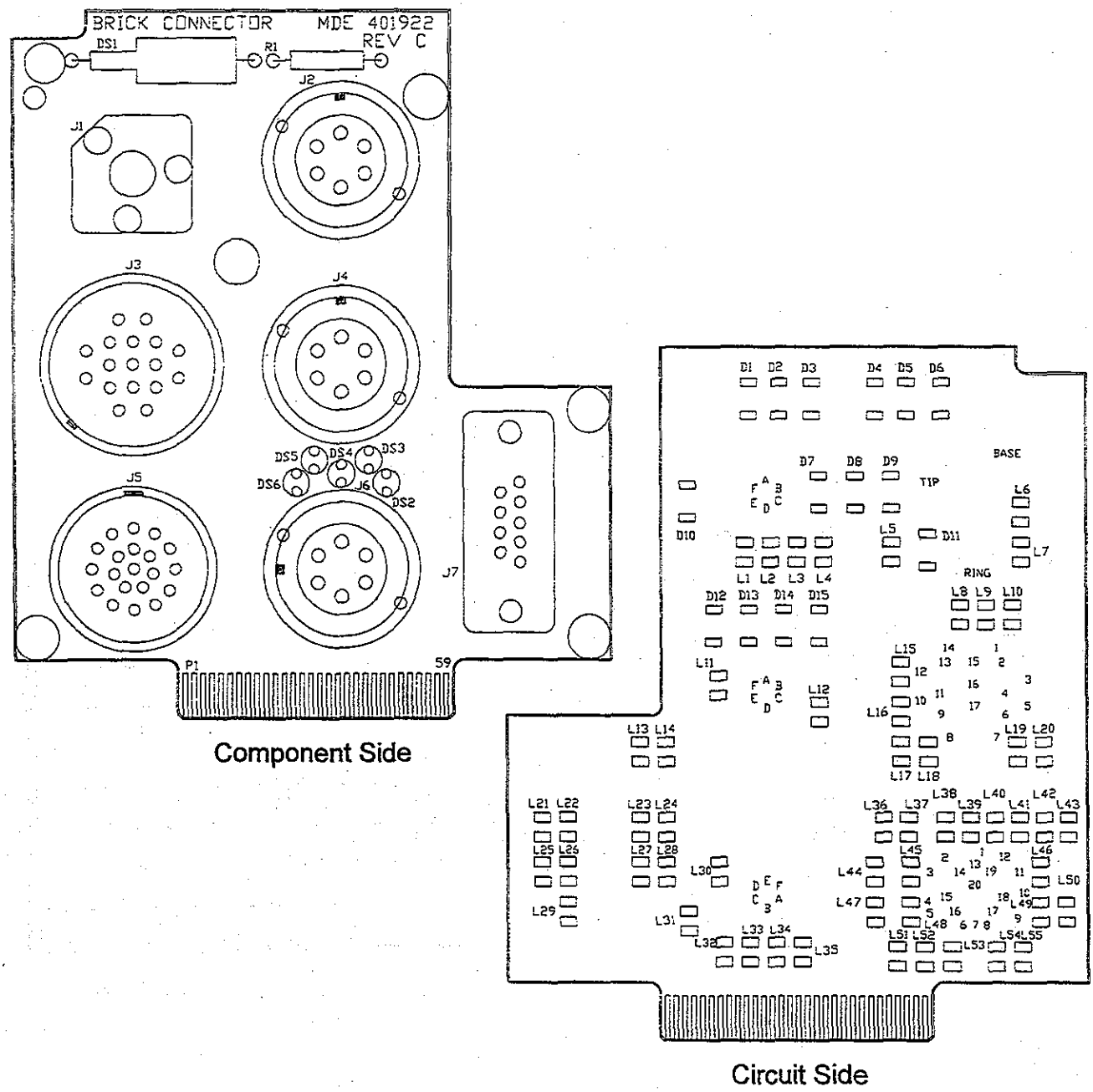


Figure 5-14: MPM Connector Board

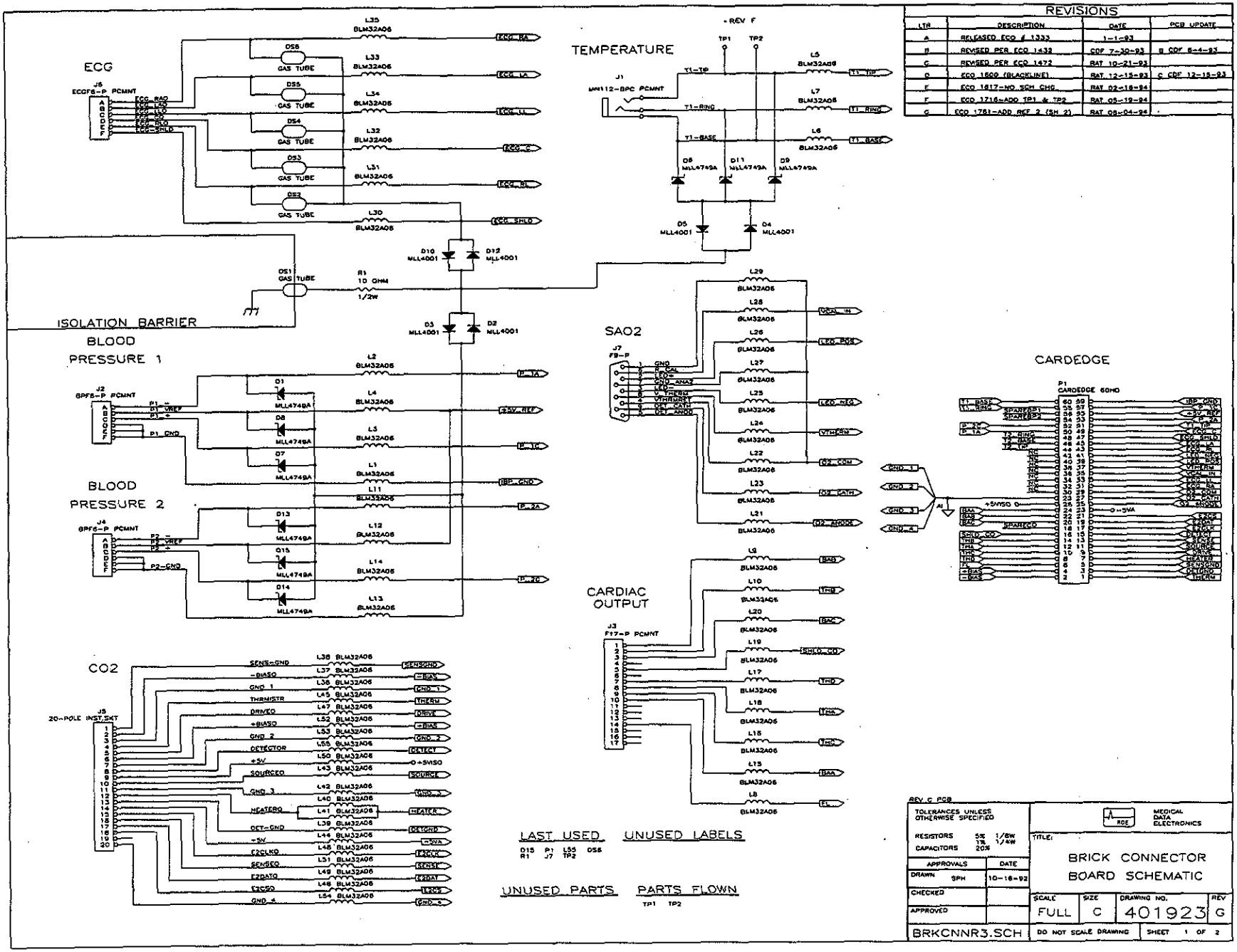


Figure 5-15: MPM Connector Board Schematic 5-11 / 5-12

Table 5-5: Parts Listing, PCBA P/N 401923-0000, MPM Connector Board

MDE Part Number	Description	Quantity	Reference
360600-0002A	HARDWARE, TEFLON FEEDTHRU	2	TP1, TP2
370102-0100A	RES, 10,1/2W,5%,CF TAPE & REEL	1	R1
378000-0064A	DIODE, 1N4001 SMD	6	D2, 3, 4, 5, 10, 12
378000-0067A	DIODE,SMB5934BTS / 1N4749ASMD 24VZ,DO213AB CASE	9	D1, 6, 7, 8, 9, 11, 13, 14, 15
382000-0048A	SEMICONDUCTOR EMI SUPPRESSION FILTER SMD BLM32A06	55	L1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55
384000-0209A	SURGE ARRESTOR GT-RLSA80DSS	5	DS2, 3, 4, 5, 6
384000-0210A	SURGE ARRESTOR CG3-6.5L	1	DS1
385000-0041A	TAPE, KAPTON, INSULATING 3/8 IN	1	1 PC
401922-0000	PCB, BRICK CONNECTOR REV C (E1600)	1	1

Table 5-6: Parts Listing, PCBA P/N 402212-0000, MPM HP Connector Board

MDE Part Number	Description	Quantity	Reference
360600-0002A	HARDWARE, TEFLON FEEDTHRU	2	TP1, TP2
370102-0100A	RES, 10,1/2W,5%,CF TAPE & REEL	1	R1
378000-0064A	DIODE, 1N4001 SMD	6	D2, 3, 4, 5, 10, 12
378000-0067A	DIODE, SMB5934BTS / 1N4749ASMD 24VZ,DO213AB CASE	9	D1, 6, 7, 8, 9, 11, 13, 14, 15
382000-0048A	EMI SUPPRESSION FILTER SMD BLM32A06	55	L1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55
384000-0209A	SURGE ARRESTOR GT-RLSA80DSS	5	DS2, 3, 4, 5, 6
384000-0210A	SURGE ARRESTER CG3-6.5L	1	DS1
385000-0041A	TAPE, KAPTON, INSULATING 3/8 IN	1	1 PC
402211-0000	PCB, HP BRICK CONN REV. A(E1588)	1	-

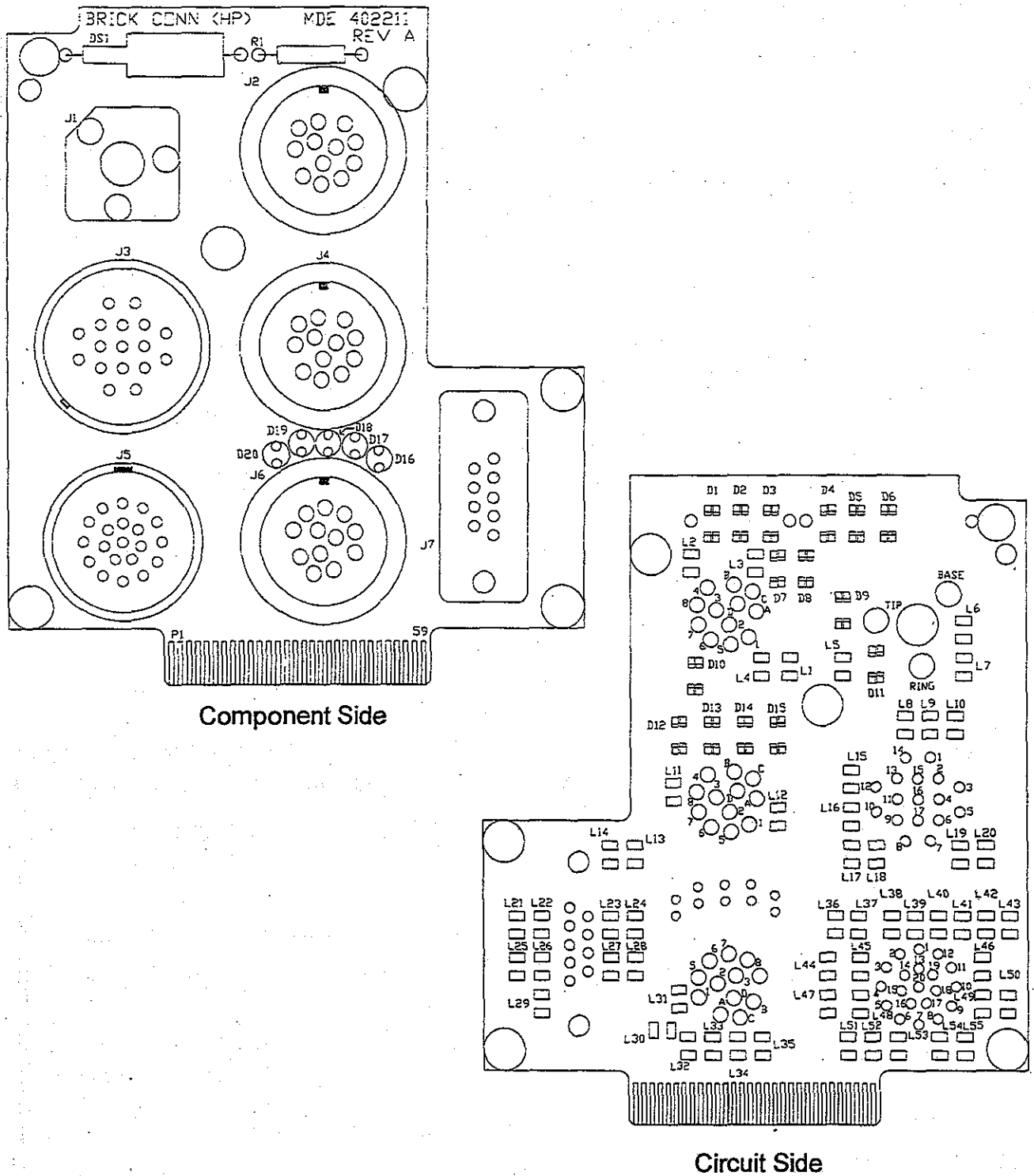


Figure 5-16: MPM HP Connector Board

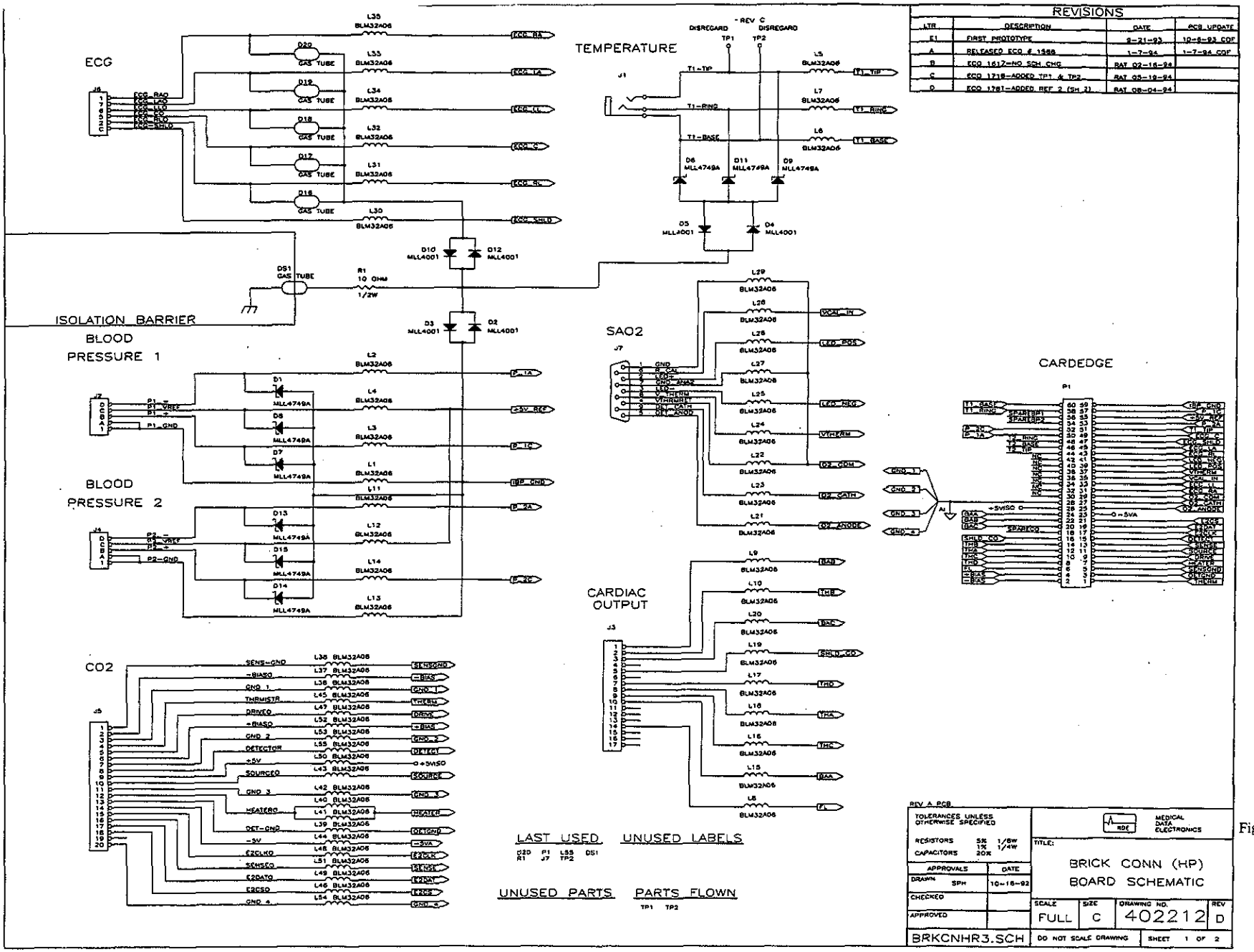


Figure 5-17: MPM (HP) Connector Board Schematic 5-15 / 5-16

5.4 ISO Power Supply

The MPM (Multiparameter Module) ISO Power Supply board provides electrical isolation between the patient and the ESCORT II monitor. All control signals are isolated through opto-isolators U2, U4, and U5. Isolated voltages are produced across T1.

An isolation boundary of approximately 7.5 kVDC is formed by the opto-isolators with more than 4 kVAC of isolation through T1. A 1000-MΩ resistor (R4) is installed to bleed off any static potential between the isolated and non-isolated sections. The voltages produced by the ISO Power Supply are +5V ISO, +15V ISO, -15V ISO. All CPU communications are routed through the ISO Power Supply to the installed parameter boards (e.g., ECG, BP, CO_2, etc.).

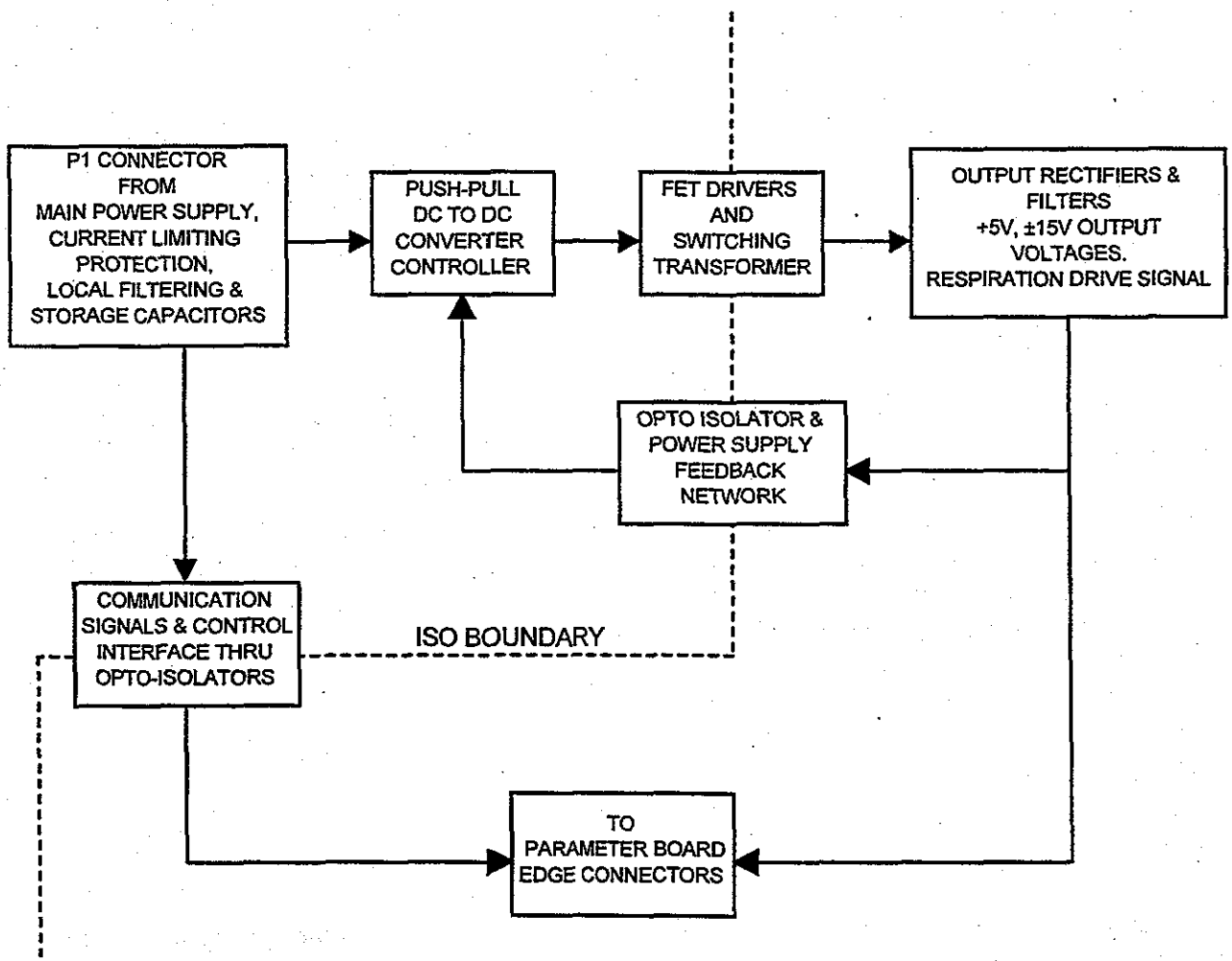

P1 CONNECTOR FROM MAIN POWER SUPPLY, CURRENT LIMITING PROTECTION, LOCAL FILTERING & STORAGE CAPACITORS
PUSH-PULL DC TO DC CONVERTER CONTROLLER
FET DRIVERS AND SWITCHING TRANSFORMER
OUTPUT RECTIFIERS & FILTERS +5V, ±15V OUTPUT VOLTAGES. RESPIRATION DRIVE SIGNAL
OPTO ISOLATOR & POWER SUPPLY FEEDBACK NETWORK
COMMUNICATION SIGNALS & CONTROL INTERFACE THRU OPTO-ISOLATORS
ISO BOUNDARY
TO PARAMETER BOARD EDGE CONNECTORS

Figure 5-18: MPM ISO Power Supply Block Diagram

5.4.1 Circuit Operation

The ISO Power Supply is comprised of a non-isolated section, an isolated section, and a series of cardedge connectors which interface with the installed parameter boards.

5.4.1.1 Non-Isolated Section

The non-isolated section of the ISO Power Supply is the electrical interface between the parameter boards and the CPU Board via the P1 connector. Also located in the non-isolated section of the ISO Power Supply is a pulse width modulator (U6), two high power MOSFETs (Q3 and Q4) and the primary side of transformer, T1.

V+, which originates on the ESCORT II's main power supply (see Chapter 3), is used as the voltage source on the primary side of the transformer. +15V, which is also developed on the main power supply, is used to provide operating power for the Pulse Width Modulator (U6). The Pulse Width Modulator has an internal oscillator that is biased with C16 and R24 to provide a free oscillating frequency of approximately 200 kHz. C13 compensates for and stabilizes the frequency. [PS_SYNC] on pin 3 is a 250 kHz synchronizing input signal from the CPU board that will preempt the internal oscillator after the power up sequence is complete. This signal assists in reducing beat frequency noise on the ECG and other circuits by switching all internal power supplies on the same edge. C18 slowly charges and provides a soft start at power up. The modulated outputs (pins 11 and 14) drive the high power MOSFETs, Q3 and Q4. They in turn drive the custom wound transformer, T1. Zener diodes, D8 and D9, provide spike protection for Q3 and Q4. The voltages are then applied to the primary side of T1.

5.4.1.2 Isolated Section

Through mutual inductance, the voltages developed on the non-isolated side of the ISO Power Supply Board are transferred to the secondary of the transformer. The voltages derived from T1 are +15VISO, -15VISO, and +5VISO.

+5VISO is divided to 2.5 V by a voltage divider which is formed by R7 and R8. The divided voltage is then sampled by D7 (adjustable precision shunt). D7 is configured on the output side of the isolated section to modulate the photo diode current of opto-isolator U2B. The transistor portion of U2B is connected to U6-2 (error amplifier). Variations in the output voltage are then optically transferred back to the pulse width modulator (U6) controller for correction. The objective is to produce a reliable and steady +5VISO and VREF.

The +15ISO and -15VISO output circuits have separate rectification and LC circuits to provide DC voltages. Using the +15VISO output as an example, D2 and D4 are used to rectify the voltage from T1 and an LC circuit consisting of L1 and C9 convert the pulsating DC to a steady DC level. C4 filters the DC voltage and R15 serves as a load or bleeder resistor. The -15VISO output is developed with a similar circuit.

The combination of VR1 and C19 is used to reduce EMI. VR1 is set at the factory for the least amount of EMI. VR1 is adjusted to insure that less than 200 mV of noise exists between ISO ground and chassis ground.

The signal [RESPDRVI] originates at pin 8 of T1. [RESPDRVI] is a 125 kHz square wave that is used by the respiration circuitry to generate the patient's respiratory waveform.

Opto-isolators U2, U4 and U5 couple the signals [VPP_ENA], [CPU_RXB], [CPU_TX\] and [TIMETIK\] across the isolation barrier. [VPP_ENA] is regulated with U1 to form [VPP] (+12V). [VPP] is used by the system CPU to apply power to the parameter board EPROMs.